

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
11 August 2005 (11.08.2005)

PCT

(10) International Publication Number  
**WO 2005/074145 A1**

(51) International Patent Classification<sup>7</sup>: **H03M 7/30**,  
H04N 1/41

(21) International Application Number:  
PCT/JP2005/001289

(22) International Filing Date: 24 January 2005 (24.01.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
2004-024485 30 January 2004 (30.01.2004) JP  
2004-239792 19 August 2004 (19.08.2004) JP

(71) Applicant (for all designated States except US): **CANON KABUSHIKI KAISHA** [JP/JP]; 3-30-2, Shimomaruko, Ohta-ku, Tokyo 1468501 (JP).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **MITARAI, Yusuke**

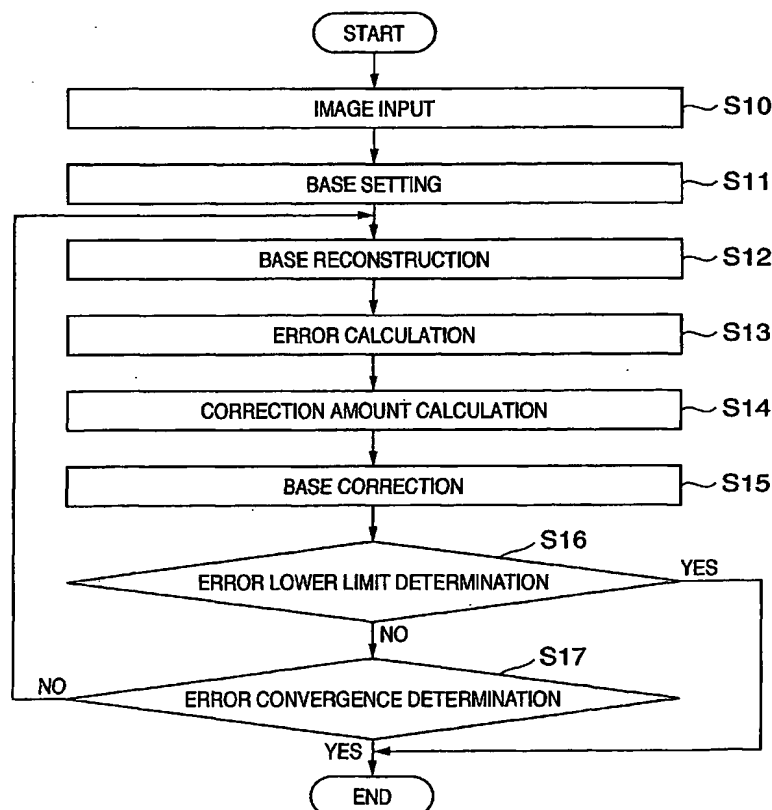
[JP/JP]; c/o Canon Kabushiki Kaisha, 3-30-2, Shimomaruko, Ohta-ku, Tokyo 1468501 (JP). **MATSUGU, Masakazu** [JP/JP]; c/o Canon Kabushiki Kaisha, 3-30-2, Shimomaruko, Ohta-ku, Tokyo 1468501 (JP). **MORI, Katsuhiko** [JP/JP]; c/o Canon Kabushiki Kaisha, 3-30-2, Shimomaruko, Ohta-ku, Tokyo 1468501 (JP). **MORIE, Takashi** [JP/JP]; 5-21-21, Saijochuo, Higashihiroshima-shi, Hiroshima 7390025 (JP).

(74) Agent: **OHTSUKA, Yasunori**; 7th Fl., Shuwa Kioicho Park Bldg., 3-6, Kioicho, Chiyoda-ku, Tokyo 1020094 (JP).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH,

[Continued on next page]

(54) Title: CODING METHOD AND APPARATUS, AND COMPUTER PROGRAM AND COMPUTER-READABLE STORAGE MEDIUM



(57) Abstract: Data in multidimensional space such as a two-dimensional image is encoded with high efficiency. Further, as two-dimensional data can be decomposed to one-dimensional bases, the problem of wiring for two-dimensional parallelizing in a convolution arithmetic unit can be solved. For this purpose, two-dimensional image data  $f(x,y)$  to be encoded is inputted, and one-dimensional adaptive bases  $X(x), Y(y)$  representing the two-dimensional image are obtained. Next, a reconstructed image is generated based on the one-dimensional adaptive bases, and the one-dimensional adaptive bases are corrected based on an error  $E$  between the reconstructed image and the input image. The correction is repeated until the error  $E$  is reduced.

WO 2005/074145 A1



PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,  
TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,  
GQ, GW, ML, MR, NE, SN, TD, TG).

(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,

**Published:**

— with international search report

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*